Toolkit

The Technical Assistance and Services Center (TASC) for the Medicare Rural Hospital Flexibility Program (Flex) presents this tool kit for use by Critical Access Hospital (CAH) administrators and staff as they begin to plan and implement health information technology (HIT) systems.

Components of the tool kit include an introduction, brief background and history, a readiness assessment survey, a survey administration and results worksheet that includes considerations for training and integration, and a glossary and resource list.

For the purposes of this toolkit, the following definitions apply:

- Health Information Technology (HIT) – The general term for using technology applications to manage health information for many purposes.
- Electronic Health Record (EHR) – A term that refers to the system for collecting and managing data for clinical decision-making at the point of care.
- System – The interaction of people, processes, policies, hardware and software around health information.

Currently, critical access hospitals throughout the nation are at very different levels of HIT knowledge and implementation. Therefore, this tool kit serves only as an overview designed to jumpstart the process of HIT implementation. It is not a comprehensive step-by-step workbook. A brief resource list is included for those seeking more in-depth information and assistance with the adoption of HIT.

The following overview presents a brief introduction to many of the aspects of HIT implementation that are of particular interest to rural hospitals.

Overview

Human Resources

Integral to the success of any HIT initiative is attention to the people and processes that will utilize the technology throughout the organization. It is necessary, but not sufficient, to invest in HIT equipment and applications. Plan the HIT budget to include education, training and ongoing support for the people who will use the applications. In addition, spend time up front redesigning processes to reduce redundancy and rework. This will enable greater efficiency and effectiveness of the HIT investment.

Financial Resources

HIT implementation will change the allocation of resources within the organization. There will be an initial investment in equipment such as hardware and software, as well as an initial loss of productivity during the change from paper to electronic systems. To plan the budget, factor in the full cost of the current paper-based system and re-allocate those resources within the new electronic system, in addition to any new funding that will be required.

Computer Hardware and Technology Infrastructure

A minimum level of computerization is essential to HIT implementation with the addition of more equipment and applications phased in over time. In most hospitals, this investment is made over the course of several years. A well-designed plan delineates the phases of acquisition and implementation across a timeline or calendar and integrates the ongoing expenses into the organization's overall budget planning. Some of the hardware and equipment used as infrastructure for HIT implementation includes:

- Computer servers
  - Data warehouse
  - Data storage for viewing
- Computer workstations (mobile and stationary), desktop and laptop computers
- Scanners
- Digitizers
- Telehealth equipment
- Personal Digital Assistants (PDAs)
- Tablet computers
- Wired and/or wireless local area networks (LAN) and wide area networks (WAN)
- High speed or broadband Internet access

The following is a list of common software and applications of information technology in health care (This is not intended to be an all-inclusive list.):

Non-clinical applications of IT

- Business office, billing and coding
- Patient scheduling
- Supply chain management

Clinical applications of IT

- Dictation
- Document imaging
- Results reporting
  - Lab
  - Radiology
  - Other diagnostic testing
- Medication administration
- Health information management (medical records)
  - Release of information
  - Chart tracking
  - Deficiency analysis
  - Abstracting
  - Coding
- Telehealth

  - Telepsychiatry
- Patient charting
  - Nurse notes
  - Progress notes
  - Vitals
  - History & physical
- Transfer of records
- Order entry
  - Lab
  - Medication
  - Radiology
  - Other ancillary
- Access to picture archiving & communication (PACS)
- Provider portal
- Computerized physician order entry (CPOE)
- Clinical Decision Support System (CDSS)
- Patient portal, personal health record

Current Issues

The establishment of the national coordinator on health information technology (ONCHIT) within the Department of Health and Human Services establishes that integrated HIT is the future of health care. There is widespread agreement that high quality, cost-effective, patient-centered health care cannot be achieved without the application of technology. However, a large gap exists between what is possible with available technology and the actual use of this technology in health care. Some of the issues surrounding this gap are summarized below.

Cost

By far the greatest concern for health care providers is the cost of HIT. In a May, 2005 national survey of small rural hospitals conducted by TASC, capital needs was listed by 81 percent of the respondents as one of the biggest barriers to initiating HIT. Staff time was listed as a barrier by 50 percent of the respondents. Clearly, resource allocation is a major consideration of HIT implementation.

Although the application of information technology has been estimated to save billions of dollars in the health care system, it is the providers who pay for implementation of HIT and the payers who receive the savings through reduced utilization of health care services.

Recognizing the need for outside resources to speed adoption and implementation of HIT, government and private funders are allocating more of their budgets to grants, programs and contracts for HIT. (see Resources)

Interoperability standards

One of the major issues cited as a barrier to implementation is the inability of one product to share information with another product. There are literally hundreds of HIT products on the market today, each with its own operational framework. Interoperability – the ability of one program or product to share information with another – is a primary focus of the office of interoperability standards within the office of ONCHIT. Interoperability is also a main focus in the development of regional health information organizations (RHIOs).

Health care information standards have been developed. However, each standard set is designed for a specific segment of the health care industry – feeding the "silo" culture of specialization that inhibits information sharing. Here are some of the main standards sets in use:

Consolidated health informatics standards

- Health Level (HL7) – enable the sharing of clinical information
- National Council on Prescription Drug Programs (NCDCP) – drug ordering from retail pharmacies (adopted under HIPAA)
- Institute of Electrical and Electronics Engineers 1073 (IEEE1073) – connecting devices to IT systems for monitoring purposes
- Digital Imaging Communications in Medicine (DICOM) – radiology
- Laboratory Logical Observation Identifier Name Codes (LOINC) – storing and transmission of lab results
- HIPAA Transaction Set – for billing and administrative purposes
- Systematized Nomenclature of Medicine Clinical Terms (SNOMED) – results contents
- Human Gene Nomenclature (HUGN) – exchanging information regarding the role of genes in biomedical research in the federal health sector

Privacy & security

Of particular concern to individual consumers or patients in the health care system is the confidentiality and security of their private health information. HIPAA provides the foundation for protecting the confidentiality of health information and the secure electronic transmission of protected information.

An additional concern for both consumers and providers is accurate identification of the patient when accessing health information. One solution, the individual patient identifier, was initially introduced as a single identifying health information number (similar to the Social Security Number). When identity-theft-type concerns arose, new design suggestions incorporated a constellation of identifying information.

Protection of privacy, secure transmission of information and developing trust with consumers are of primary concern to ONCHIT – particularly as it pertains to interoperability standards and RHIO development.

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Survey Administration

Making the transition to an automated, digital environment requires the transformation of processes, people and systems throughout the organization. Simply automating inefficient workflow and redundant processes will result in little or no return on investment. QIO experience with the DOQ-IT (doctor's office quality through information technology) project has led to the recommendation that an organization prepare the for clinical information technology systems with process redesign before selecting the technology that will best support its people and efficient workflow and processes.

The first step to implementing any component of clinical health information technology (HIT) is to assess readiness throughout the organization. The multidisciplinary leadership team selected for the clinical HIT initiative may conduct a thorough assessment and profile of the hospital's current status. The following templates may be used to establish this information baseline.

Survey Form

Distribute the accompanying opinion survey form to a task force of staff and providers to fill out and return within a short time period (one week). Aggregate the results for each group listed and for the organization as a whole. Once complete, these results will form the basis for planning the next steps toward implementation of your selected technology application.

Results

Assign points to each returned survey using the following scale: Agree = 2, Disagree = 0, Don't Know = 1, then average the scores for all returned surveys and enter the result on this form. A higher score represents greater readiness in that particular segment. The comments column in sections A-F provides further insight into the case for HIT readiness. Section G is a tool to assess and plan for technology skills education for all staff. **This tool should only be used to gauge the readiness of an organization to undertake HIT initiatives. It should in no way be the determining factor and should be used in consideration, along with other facts and information.**

Health Information Technology (HIT) Opinion Survey

A. Market & Environment	Average Score	Comments

1. Patient expectations		Market: Patients and payers expect that demographic information, tests and results will be available at the time of service and will not pay for duplicate tests due to lack of access. Environment: Patients increasingly use the Internet and electronic resources to find health information and they expect their care providers to have access to the same information.
2. Electronic security		Market: Data security is an issue with both paper and electronic records. Diligent application of policies and procedures along with physical and electronic security measures will ensure data privacy is protected. Environment: HIPAA provides the foundation for protection of data privacy and secure transmission.
3. Data for performance and compliance		Market: Consumers may expect objective measures of performance to compare with other providers. Environment: Regulators and payers increasingly expect providers to document outcomes and share performance data electronically.
4. External resource links		Market: Telemedicine and continuing education via interactive TV or the Internet are efficient, cost effective alternatives to travel for rural providers. Environment: Links to urban centers via technology are becoming more widely available with lower costs than ever before.
5. Improve quality		Market: Patients and payers are increasingly concerned with quality of care issues. Electronic data collection and analysis ensures timely attention to improvement. Environment: The volume of information and rate of change in medicine can only be managed and utilized in an electronic environment.
6. Competitive advantage		Market: Electronic access to external resources and patient information can be used to reduce patient migration to urban centers and increase market share. Environment: Patients who may otherwise travel for health care services may use local services if comparable technology is available.
7. Revenue capture		Market: Clinical technology applications that link to the billing system can increase revenue by ensuring all services are recorded and appropriately coded. Environment: Accurate claims submission is key to financial success.

	Average	Comments

B. Organizational Culture	Score	
1. Work process change		Efficiencies gained through previous work process change initiatives will reduce the cost and increase the speed of adoption for HIT.
2. Training and development		Optimizing the use of HIT applications will require staff training and professional development. The organization should be prepared to invest training time up front and for ongoing support to realize the increased efficiencies available through HIT.
3. **Initiating** process changes		Initiating HIT in the organization will disrupt normal workflow and processes. Prior experience with this type of disruption is helpful for the HIT initiative.
4. **Maintaining** process changes		Experience with process changes that are regularly integrated and maintained in the daily workflow of an organization will increase the likelihood that HIT implementation will succeed. Organizations with a history of short-term changes that eventually revert to old processes may experience a longer implementation cycle and redundant process change with HIT.
5. Multi-year change		Many organizations implement HIT in phases for budget and human resource reasons; organizations experienced with multi-year projects will have a higher tolerance for the implementation of HIT.
6. Communication		HIT implementation can significantly shift the flow of information throughout an organization. Those organizations with established communication channels are better prepared to manage these changes and ensure all staff members are kept up to date.
7. Early adoption		Organizations experienced in adopting new technology have a higher tolerance for the disruption inherent in implementation that may lead to greater satisfaction with HIT applications.
8. Follow-through		All parties within in the organization contribute to the success or failure of HIT implementation. An organization with a history of follow through from all stakeholders will have a shorter adoption curve and achieve greater utilization of HIT applications.

C. Financial Resources	Average Score	Comments
1. Capital		Capital for the initial investment in HIT is available from many sources – explore the possibilities for government, corporate and private foundation grants in addition to the more traditional sources such as loans.
2. Budget capacity		HIT implementation will impact the annual budget – but it is

		not all new expense. Factor in the current costs of managing health information and the anticipated resource allocation changes in each department such as medical records, coding and transcription.
3. Return on investment		Many small hospitals have experienced increased efficiency and captured revenue that contributes to a return on investment much sooner than originally anticipated. Each organization will realize a return over the long-term.
4. Loss of productivity		There will be an initial loss of productivity while providers and staff implement new workflow and processes that incorporate HIT. The time period of lowered productivity can be shortened through planning, preparation and training.
5. Technology cost		The direct investment in HIT applications is only part of the budget story. Plan to invest long-term financial and human resources in training and support to ensure maximum use of the HIT applications so a return on investment can be realized.
6. Workflow/process issues		Implementation of HIT applications presents an opportunity to redesign processes and workflow to increase efficiency and productivity. Part of the HIT planning process may include process redesign prior to selecting a product so the product fits the current workflow rather than adapting workflow to fit the product selected.

D. Technical Infrastructure	Average Score	Comments
1. Current inventory		One of the first steps in the HIT implementation project should be to complete a thorough inventory of existing equipment, applications and compatibility. New equipment or software can then be assessed for its compatibility and fit within the existing IT infrastructure.
2. HIT plan		Undertaking a comprehensive HIT strategic planning process will result in a focused approach to implementation that will save substantial financial and human resources over the timeline of the plan.
3. Information exchange		Planning for the HIT initiative should include the capability to exchange information electronically with other providers. In the near future, payers, regulators and patients will expect that clinical information can be shared electronically at the point of service.
4. High speed Internet		Access to high speed or broadband Internet is a cornerstone for health information technology implementation. Incorporate organization-wide access to the Internet
5. Additional workstations		One of the components of successful HIT implementation is

		access through workstations positioned in key locations throughout the organization. During the inventory and planning stages of the HIT Project, assess the organization's workflow to determine the best locations for staff and provider access through personal workstations.
6. Successful IT implementation		Prior experience with a HIT application is not necessary, but will allow for a more efficient implementation cycle with a new initiative if reviewed and "lessons learned" are integrated.

E. Staff Infrastructure	Average Score	Comments
1. IT experts		Direct access to IT expertise is critical to the success of the HIT project. Plan and budget for both short-term installation assistance and long-term support by information technology staff, either through employment of contract.
2. Computer experience		The HIT plan should include an assessment of the current computer skills used by staff and providers. Matching current skills with a plan to train staff the new skills needed for the HIT application will result in a shorter implementation curve and greater staff satisfaction with the new application.
3. Physician champion		The physician champion is a crucial link to the success of the HIT application. Providers who approach adoption of the technology experience higher satisfaction levels and greater efficiencies sooner than those who approach it recluctantly.

Health Information Technology (HIT) Related Computer Skills Survey

G. Technology	Average Score	Suggestions for Further Training
34. E-mail		A peer or IT staff person
35. Basic PC software programs: (Word processing, spreadsheet, database)		A peer or IT staff person
36. Internet/Intranet		A peer or IT staff person
37. Basic personal computer skills: (keyboard, mouse, touchpad, icons or graphical interface, drop-down menus)		A peer or IT staff person
38. PDA		A peer or IT staff person
39. Computerized Order Entry		Vendor with IT staff follow-up

40. Electronic Medication Admin		Vendor with IT staff follow-up
41. Interactive TV or telemedicine		Vendor with IT staff follow-up
42. Other – please list		

SURVEY Instrument

Date Survey Completed: ____/_____/_____ Organization _____

Please fill out this survey from the perspective of your department and place an "X" in the space below that describes your role in the organization.

Your Role	**X**
Physician/mid-level provider	
Nurse	
Allied Health Staff	
Administrative Staff	
Information Technology Staff	

Health Information Technology (HIT) Opinion Survey

Please place an "X" in only <u>one</u> of the "Agree," "Disagree," or "Don't Know" columns to the right of each statement below:

A. Market & Environment	Agree **X**	Disagree **X**	Don't Know **X**
8. In future years, our patients expect us to use clinical HIT.			
9. Electronic records are more secure then paper records.			
10. Data collected through HIT will improve our performance and compliance with government and third-party payers.			
11. An HIT investment will link us to external resources for			

telemedicine and continuing education and training.			
12. Use of clinical HIT will improve quality of care.			
13. Investing in HIT will help us maintain competitive advantage in our service area.			
14. Use of HIT will give us the potential to capture more revenue.			
B. Organizational Culture	Agree **X**	Disagree **X**	Don't Know **X**
9. Our organization has experienced success with work process change.			
10. Our organization supports staff training and professional development.			
11. Our organization has experienced success **initiating** process changes that standardize clinical practice.			
12. Our organization has experienced success **maintaining** process changes that standardize clinical practice.			
13. Our Organization's leadership is prepared to sustain a multi-year change process across departments and disciplines			
14. There are established, effective communication channels throughout our organization (including staff, administration, and physicians/providers whether employed by the organization or not).			
15. Our organization adopts new ideas before most other hospitals adopt them.			
16. There is a history of follow-through with new initiatives and confidence that both administration and clinicians will follow through with implementation of clinical HIT applications.			
C. Financial Resources	Agree **X**	Disagree **X**	Don't Know **X**
7. Our organization has the ability to acquire capital for the initial investment in HIT.			
8. Our organization has the budget capacity to cover the ongoing costs of HIT maintenance and support.			
9. Clinical HIT implementation will eventually produce a financial return on investment.			
10. Our organization is prepared for an initial loss of productivity during implementation of HIT applications.			
11. It will cost the organization more in training and adopting new ways to accomplish work than the cost of technology itself.			
12. Our organization has workflow process issues that could be addressed with HIT.			
D. Technical Infrastructure	Agree **X**	Disagree **X**	Don't Know

			X
7. Our organization has a current inventory of its technology infrastructure including performance capabilities, hardware (servers and PC stations), networks, software and system interfaces.			
8. Our organization has a comprehensive HIT plan that includes acquisition, replacement and maintenance of hardware and software.			
9. Our organization must be able to exchange clinical information electronically with other providers.			
10. Our organization has access to high speed or broadband Internet service.			
11. Our organization is prepared to provide additional hardware and software for staff.			
12. Our organization has experienced successful implementation of a major health information technology initiative such as telemedicine, a lab information or radiology information system.			
E. Staff Infrastructure	Agree **X**	Disagree **X**	Don't Know **X**
4. Our organization has IT staff, or access to IT experts, to support installation and maintenance of hardware and software, and to provide user support.			
5. Physicians, nurses and other clinicians in our organization have experience using computers as part of their routine clinical work.			
6. A physician champion has clearly emerged to support HIT implementation.			

Health Information Technology (HIT) Related Computer Skills Survey

My peer group within this organization is experienced and adept at using the following technology applications:			
G. Personal Technology Skills	Agree **X**	Disagree **X**	Don't Know **X**
1. E-mail			
2. Basic PC software programs: (Word processing, spreadsheet, database)			
3. Internet/Intranet			

4. Basic personal computer skills: (keyboard, mouse, touchpad, icons or graphical interface, drop-down menus)			
5. PDA			
6. Computerized Order Entry			
7. Electronic Medication Administration			
8. Interactive TV or telemedicine			
9. Other – please list			

The electronic transfer and storage of health information as a means to increase efficiency and reduce errors is not a new concept. The application of information technology to health care began in the 1950s when computers first came into use.

Brief History

1950s

- Computers used for dental projects at the National Bureau of Standards
- Expert systems [MYCIN and INTERNEST-1] developed

1960s

- Medicare contracts with insurers for data processing
- The National Library of Medicine started to use Medline
- Larry Weed introduced the concept of the Problem Oriented Medical Record into medical practice
- MUMPS (Massachusetts General Hospital Utility Multi-Programming System) was developed in the Laboratory of Computer Science at Massachusetts General Hospital in Boston.

1970s

- Hospitals begin to invest in IT
- 1974 Health Planning and Resources Development Act seeks "national intelligence for planners"
- Throughout the 1970s and 1980s MUMPS was the most commonly used programming language for clinical applications. A descendent of this system is currently used in the Veterans Health Administration hospital system and is now available to all health care providers in the form of VISTA.
- Regenstreif Institute (IN) introduces the first electronic medical record system

1980s

- Regenstreif Institute creates community health information network
- Reagan administration abandons health planning and resources development act

1990s

- HHS Secretary Sullivan proposes a "health security card"
- National Health Information Infrastructure via Clinton health reform - rewritten as HIPAA
- IOM "To Err is Human" estimates 44,000-98,000 annual hospital deaths due to medical errors
- The "dot gov" era begins
- HIPAA standards for safe and secure transmission of billing and clinical health information

2000s

- IOM "Crossing the Quality Chasm" recommends using information technology to achieve its six aims: safe, effective, patient-centered, timely, efficient and equitable health care system
- 9/11 – Emergency preparedness and public health infrastructure
- Medicare Modernization Act includes provisions intended to foster electronic prescribing by requiring standards for interoperability and by permitting third parties to offset implementation costs
- ONCHIT (Office of the National Coordinator for Health Information Technology) established
- 2006 President's budget allocates $125 million for DHHS HIT development and other HIT-related projects such as $300 million for Department of Veterans Affairs next generation health processing system
- IOM "Quality Through Collaboration: The Future of Rural Health" - 5 of 12 recommendations involve Health Information Technology

National Framework

The most recent national discussion was initiated on April 27, 2004 when President Bush called for widespread adoption of interoperable EHRs within 10 years and established the position of National Coordinator for Health Information Technology. On May 6, 2004, David J. Brailer, MD, PhD was appointed to serve in this position and the Office of the National Coordinator for Health Information Technology (ONCHIT) was established. Formalized within the office of the Secretary of Health and Human Services, four divisions of ONCHIT were named in August of 2005:

- Office of Health Information Technology Adoption,
- Office of Interoperability Standards,
- Office of Programs and Coordination, and
- Office of Policy and Research.

ONCHIT's Framework for Strategic Action outlines four major goals and 12 strategies for achieving the vision of improved consumer-centric health care for all Americans. The four goals are summarized below:

Goal 1: Inform clinical practice through EHRs
Goal 2: Interconnect clinicians to move information with consumers from one point of care to another through an interoperable infrastructure.
Goal 3: Personalize care to help individuals manage their own wellness and personal health care decisions.
Goal 4: Improve population health through the collection of timely, accurate and detailed clinical information for evaluation and reporting.

The Framework for Strategic Action called for convening a Leadership Panel to examine the importance of investing in HIT, particularly regarding the respective major roles of government and the private sector in its widespread implementation. Members were drawn from executives in companies that purchase substantial levels of health care for their employees but have no direct involvement in the health care or information technology industry. Membership selection criteria were intended to learn how IT has been successfully adopted and used by other sectors. Key imperatives and some of the conclusions of this panel include:

- Widespread adoption of interoperable HIT should be top priority for the US health care system.
    - Potential benefits of HIT far outweigh manageable costs
- The federal government should use its leverage as the nation's largest health care payer and provider to drive adoption of HIT.
    - The federal government should provide leadership and industry will engage and follow.
- Private sector purchasers and health care organizations can and should collaborate alongside the federal government to drive adoption of HIT.

Central to ONCHIT's approach to developing a national health information network is the development of regional health information organizations (RHIO) that interconnect local sources of health information and feed in to a national level of interconnectedness. According to the Health Information Management Systems Society (HIMSS), 40 states have at least one community-based health information exchange, 28 states have formal RHIO efforts underway, and 13 states have legislation or governor support for RHIO development. Some examples of these emerging RHIOs include:

- Massachusetts Health Data Consortium
- Santa Barbara
- Indiana Network for Patient Care
- Care Spark (NE TN & SW VA)
- CalRHIO
- Health-e-LA Coalition
- Philadelphia Health Information Exchange
- Minnesota e-Health Initiative

The American Health Information Community was formed to help advance efforts to reach President Bush's call for most Americans to have electronic health records within ten years. A federally-chartered commission, "The Community" will provide input and recommendations to HHS on how to make health records digital and interoperable, and assure that the privacy and security of those records are protected, in a smooth, market-led way. The Community is chartered for two years, with the option to renew for a duration of no more than five years. The Department intends for the Community to be succeeded within five years by a private-sector health information community initiative that, among other things, would set additional needed standards, certify new health information technology, and provide long-term governance for health care transformation. Secretary Leavitt named its first 17 members in September of 2005.

Funded Projects

To forward the national framework, the Department of Health and Human Services has awarded contracts to three public-private groups that will advance the vision of nationwide interoperable HIT. These contracts are: 1) The American National Standards Institute (ANSI) will develop, prototype, and evaluate a harmonization process for achieving a widely accepted and useful set of health IT standards that will support interoperability among heath care software applications; 2) The Certification Commission for Health Information Technology (CCHIT) will develop criteria and evaluation processes for certifying EHRs and the infrastructure and network components of interoperability; and, 3) The Health Information Security and Privacy collaboration (HISPC) will work with 40 states to assess and develop plans to address variations in organization-level business spolicies and state laws that affect privacy and security practices that may pose challenges to interoperable health information exchange.

In addition, the Agency for Healthcare Research and Quality (AHRQ) awarded grants to 24 HIT projects throughout the nation in 2005. Twelve of these projects were rural projects, one (in Michigan) was awarded to a critical access hospital network for development of electronic health information sharing.

Rural Realities

Recognizing and identifying the gap between rural and urban health care in Quality Through Collaboration, the IOM identified six action items "to ensure that no rural community is left behind as the nation moves to EHRs and an electronic highway for health data exchange:"

1. Include a rural component in the National health Information Infrastructure plan,
2. Provide all rural communities with high-speed access to the Internet,
3. Eliminate regulatory barriers to the use of telemedicine,
4. Provide financial assistance to rural providers for investments in EHRs and information communications technology (ICT),
5. Foster ICT collaborations and demonstrations in rural areas, and
6. Provide ongoing educational and technical assistance to rural communities so they can make the best use of ICT.

CCHIT - Certification Commission for Health Information Technology formed by three leading healthcare organizations to create an efficient, impartial and trusted mechanism to certify ambulatory electronic health records and other healthcare information technology (IT) products.

CDE - Clinical Data Exchange

CHI - Consolidated Health Informatics

Computerized Provider Order Entry (CPOE) - A computer application that allows a providers's orders for diagnostic and treatment services (such as medications, laboratory, and other tests) to be entered electronically instead of being recorded on order sheets or prescription pads. The computer compares the order against standards for dosing, checks for allergies or interactions with other medications, and warns the provider about potential problems.

Consolidated Health Informatics (CHI) Initiative - One of the 24 Presidential eGovernment initiatives with the goal of adopting vocabulary and messaging standards to facilitate communication of clinical information across the federal health enterprise. CHI now falls under FHA.

Decision-Support System (DSS) - Computer tools or applications to assist in clinical decisions by providing evidence-based knowledge in the context of patient-specific data. Examples include drug interaction alerts at the time medication is prescribed and reminders for specific guideline-based interventions during the care of patients with chronic disease. Information should be presented in a patient-centric view of individual care and also in a population or aggregate view to support population management and quality improvement.

DICOM - Digital Imaging and Communications in Medicine - the industry standard for transferal of radiologic images and other medical information between computers. DICOM enables digital communication between diagnostic and therapeutic equipment and systems from various manufacturers.

Electronic Health Record (EHR) - A real-time patient health record with access to evidence-based decision support tools that can be used to aid clinicians in decision-making. The EHR can automate and streamline a clinician's workflow, ensuring that all clinical information is communicated. It can also prevent delays in response that result in gaps in care. The EHR can also support the collection of data for uses other than clinical care, such as billing, quality management, outcome reporting, and public health disease surveillance and reporting.

Electronic Prescribing (eRx) - A type of computer technology whereby physicians use handheld or personal computer devices to review drug and formulary coverage and to

transmit prescriptions to a printer or to a local pharmacy. E-prescribing software can be integrated into existing clinical information systems to allow provider access to patient-specific information to screen for drug interactions and allergies.

Enterprise Architecture - A strategic resource that aligns business and technology, leverages shared assets, builds internal and external partnerships, and optimizes the value of information technology services.

EPI - Enterprise Patient Index

Federated Architecture - allows a collection of database systems (components) to unite into a loosely coupled federation in order to share and exchange information. The term federation refers to the collection of constituent databases participating in a federated database.

Federal Health Architecture (FHA) - A collaborative body composed of several federal departments and agencies, including the Department of Health and Human Services (HHS), the Department of Homeland Security (DHS), the Department of Veterans Affairs (VA), the Environmental Protection Agency (EPA), the United States Department of Agriculture (USDA), the Department of Defense (DoD), and the Department of Energy (DOE). FHA provides a framework for linking health business processes to technology solutions and standards, and for demonstrating how these solutions achieve improved health performance outcomes.

HIE - Health Information Exchange

HL7 - Health Level 7 (Refers to the seven layer network model popularized by ISO): Message format standards used for exchange of data between healthcare systems.

HL7 RIM - HL7 Reference Information Model: Object model used in deriving new HL7 (Version 3) message formats.

Health Information Technology (HIT) - The application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making.

IEEE - Institute of Electrical and Electronics Engineers - A subgroup of this standards organization, IEEE1073, has produced a series of standards for biomedical data transmission that connects medical devices and monitoring equipment to healthcare information systems. This allows physicians and other clinicians to receive information electronically and automatically on patient vital signs and other data recorded by medical devices, without the need for it to be separately entered into the information systems.

Interoperability - The ability of two or more systems (or components) to exchange information and to use the information that has been exchanged.

IOM – Institute of Medicine

LOINC - Logical Observation Identifiers Names and Codes - Standard code set covering medical terms, procedures and diagnoses maintained by Regenstrief. Adopted by the largest commercial laboratories and most Federal agencies (CDC, DOD, CMS)

MPI - Master Patient Index (also called Master Person Index by some vendors): An electronic index that enables lookup of patient data distributed across multiple systems, to provide an aggregated view of patient's EHR.

NAHIT – National Alliance for Health Information Technology

NCDCP - National Council for Prescription Drug Programs - creates and promotes standards for the transfer of data to and from the pharmacy services sector of the healthcare industry. NCDCP standards are focused on prescription drug messages and the activities involved in billing pharmacy claims and services, rebates, pharmacy ID cards and standardized business transaction between pharmacies and the professionals who prescribe medications. Participating organizations include chain and independent pharmacies, pharmacists, database management companies, insurers, pharmaceutical manufacturers, IT system vendors and wholesale drug distributors.

NHIN – National Health Information Network

ONCHIT – (on kit) Office of the National Coordinator for Health Information Technology

Personal Health Record (PHR) - An electronic application through which individuals can maintain and manage their health information (and that of others for whom they are authorized) in a private, secure, and confidential environment.

Record Locator Service (RLS) – Indexing software (still in development) designed to enable authenticated users at each sub-network organization to access EHRs from any location. The final model will most likely include several data fields including: patient demographics, record location, local medical record number and the date of last update to the record.

RHIN – Regional Health Information Network

RHIO – Regional Health Information Organization

RPI – Regional Patient Index

RxNorm - Clinical drug nomenclature produced by NLM, in consultation with FDA, VA, and the HL7 standards development organization. RxNorm provides standard names for clinical drugs and for dose forms as administered.

SAML - Secure Assertion Markup Language - SAML provides an XML-based framework for exchanging authentication and authorization information, enabling single sign-on--the ability to use a variety of Internet resources without having to log in repeatedly. Provides a technology neutral way to exchange security information using XML to communicate authentication, authorization, and other user attribute information.

SNOMED - Systemized Nomenclature for Medicine: Clinical Terms - Standard code set covering medical terms, procedures and diagnoses maintained by College of American Pathologists. The federal government, through the National Library of Medicine, has signed a contract with CAP for a perpetual license for the core terminology set called SNOMED CT, which stands for Systemized Nomenclature for Medicine: Clinical Terms. The agreement makes SNOMED CT available to IT users in the U.S. at no cost.

Sources

Office of the National Coordinator for Health Information Technology (ONCHIT), Health IT Strategic Framework

www.volunteer-ehealth.org/resources/glossary.htm Volunteer eHealth Initiative, managed by the state of Tennessee in partnership with Vanderbilt University Medical Center